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Modeling and development of radio frequency planar interdigital electrode sensors (Article)

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Abstract

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The interdigital sensor has been implemented in various field of applications such as microwave device, chemical sensor and biological sensor. This work describes the design and fabrication of an interdigital sensor (IDS) design that has the potential of estimating blood glucose levels using capacitive measurements. The IDS was first designed using theoretical equations and later was optimized by using CST Microwave Studio®. The electrode widths of the sensor were varied from 0.5mm to 0.7mm and the S11 reflection characteristics were simulated. Upon completion of simulations, the sensor was fabricated using copper clad FR4 boards. The fabricated sensors were measured using a vector network analyzer (VNA) and produced resonance frequencies of 2.02, 2.11 and 2.14 GHz. The highest Q obtained was 11.72 from the 2.11 GHz sensor. © 2019 Institute of Advanced Engineering and Science. All rights reserved.

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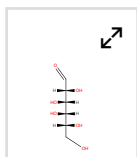
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